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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN: 0648-XD969

Stock Status Determination for Atlantic Highly Migratory Atlantic Smooth Dogfish Shark and the Gulf of Mexico Smoothhound Sharks Complex

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice.

SUMMARY: This action serves as a notice that NMFS, on behalf of the Secretary of Commerce (Secretary), has determined that the Atlantic smooth dogfish shark (*Mustelus canis*) and the Gulf of Mexico smoothhound shark complex, which is comprised of Atlantic smooth dogfish, Florida smoothhound (*M. norrisi*), and Gulf smoothhound (*M. sinusmexicanus*), are not overfished and overfishing is not occurring.

FOR FURTHER INFORMATION CONTACT: Andrew Rubin or Karyl Brewster-Geisz by phone at 301-427-8503.

SUPPLEMENTARY INFORMATION:

Background

Atlantic smooth dogfish, Florida smoothhound, and Gulf smoothhound sharks are managed under the authority of the Magnuson-Stevens Fishery Conservation and Management Act. NMFS manages all shark species, except for spiny dogfish (*Squalus acanthias*), under the

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2006 Consolidated Atlantic Highly Migratory Species (HMS) Fishery Management Plan (FMP) and its amendments.

NMFS recently assessed the status of these species for the first time using the Southeast Data, Assessment, and Review (SEDAR) process. The final stock assessment (SEDAR 39) was finalized and peer reviewed in March 2015.

Data from tagging and genetic research in SEDAR 39 support the existence of two distinct Atlantic and Gulf of Mexico stocks of smooth dogfish separated by peninsular Florida. Therefore, smooth dogfish was treated as two separate stocks, one in the Atlantic region and one in the Gulf of Mexico region.

Additionally, because smooth dogfish are the only species of smoothhound sharks occurring in the Atlantic region, the scientists conducted a stock assessment for only this species in the Atlantic region. However, because all three species occur in the Gulf of Mexico, and given the difficulty with distinguishing among and identifying the individual species of smoothhound sharks occurring in the Gulf of Mexico region, the scientists treated all three smoothhound species (smooth dogfish, Florida smoothhound, and Gulf smoothhound) as a single smoothhound shark complex within the Gulf of Mexico region.

All documents and information regarding SEDAR 39 can be found on the SEDAR webpage at *http://sedarweb.org/sedar-39*.

Atlantic Region

For Atlantic smooth dogfish, the scientists used a length-based age-structured stock assessment model. This was the first HMS shark stock assessment conducted within the SEDAR process to utilize this type of modeling framework. The Atlantic smooth dogfish assessment implemented spawning stock fecundity (SSF), which was used as a proxy for biomass, natural

mortality (M), steepness of the Beverton-Holt stock-recruitment relationship, and the selectivity patterns using the same methods as in previous HMS shark assessment.

Two selectivity patterns were explored for the main targeted gillnet fishery (dome-shaped and asymptotic). The use of these two selectivity patterns resulted in two alternative base model configurations being evaluated. Based on diagnostic results, the scientists recommended that the dome-shaped functional form be selected as the base model. The peer reviewers found this base model to be an appropriate methodology.

For this base model, the stock assessment scientists explored seven sensitivity scenarios. All seven model runs found that SSF in 2012 (SSF_{2012}), was greater than SSF_{MSY} (SSF_{2012}/SSF_{MSY} ranged from 1.96 to 2.81 vs. 2.29 in the base model) and that F_{2012} was less than F_{MSY} (F_{2012}/F_{MSY} ranged from 0.61 to 0.99 vs. 0.79 in the base model). Projection results for the base model configuration indicated that levels of fixed removals less than or equal to 550 (1000s of sharks) resulted in at least a 70 percent probability of maintaining SSF above SSF_{MSY} during the years 2013-2022. Projections for the seven sensitivity scenarios resulted in a range of fixed removals from 350 to 850 (1000s of sharks) with at least a 70 percent probability of maintaining SSF above SSF_{MSY} during the years 2013-2022.

The peer reviewers found it is likely that the Atlantic smooth dogfish stock is not overfished, and overfishing is not occurring based on the base model and range of associated sensitivities. The peer reviewers indicated that the range of sensitivities appropriately captured the uncertainty regarding the states of nature and the potential implications for the reference points. However they cautioned about inferences drawn about stock status because of the level of uncertainty associated with the stock-recruitment relationship and uncertainty in the catches, and noted that the fishing level for the most recent year is close to FMSY for some sensitivity runs.

Overall, the peer reviewers determined the stock assessment to be based on the best scientific information available. Based on these results, NMFS determined that the status of smooth dogfish is not overfished and overfishing is not occurring.

Gulf of Mexico Region

The model structure for the Gulf of Mexico smoothhound shark complex was different than the Atlantic stock of smooth dogfish because of the need to combine life history data for all three species. The scientists combined this data using a life table to calculate the mid-point biological values between the species. They then used a state-space Bayesian surplus production model that implemented a Schaefer production model in a Bayesian framework. The peer reviewers found this model to be appropriate and robust. The reviewers noted issues could occur if the biology and population dynamics differed significantly but they did not believe this was an issue for the current assessment.

In addition to the base model, the assessment scientists ran a number of sensitivities. All sensitivities found that the number of sharks in 2012 (N_{2012}), which was the proxy used for biomass for this model, was greater than N_{MSY} (N_{2012}/N_{MSY} ranged from 1.68 to 1.83 vs. 1.78 in the base model) and the exploitation rate in 2012 (H_{2012}), which was the proxy used for fishing mortality in this model, was less than H_{MSY} (H_{2012}/H_{MSY} ranged from 0.07 to 0.35 vs. 0.18 in the base model). Projections under varying catch levels conducted with the base model and sensitivities reflecting plausible states of nature, except the low catch scenario which was not deemed plausible, indicated that the 2012 catch could be increased by a factor of 4 and still allow for less than a 30 percent probability of the stock being overfished during any of the 10 years in the projection horizon. Similarly, the projected scenarios indicated that the 2012 catch could be increased by a factor of 2, 3, or 4 and still allow for less than a 30 percent probability of

overfishing occurring during any of the 10 years in the projection horizon.

The peer reviewers found the Gulf of Mexico smoothhound complex is most likely neither overfished, nor undergoing overfishing. The peer reviewers noted that the reliability of the stock status determination is dependent on the accuracy of the shrimp trawl bycatch estimates for these species and suggested that NMFS explore alternative catch streams to help assess this uncertainty. Nonetheless, the review panel believed that the model and associated sensitivities captured the main uncertainties associated with the assessment. The review panel considered the base model and corresponding sensitivity runs the best scientific information available. Based on these results, NMFS determined that the status of the Gulf of Mexico smoothhound shark complex is not overfished and overfishing is not occurring.

Dated: June 23, 2015.

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Jennifer M. Wallace,

Acting Director,

Office of Sustainable Fisheries,

National Marine Fisheries Service.

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